

**CAPITOL REEF NATIONAL PARK (CARE)**

Size 97,895 hectares (241,904 acres)

**Park History and Purpose** Capitol Reef was first established as a National Monument by Franklin D. Roosevelt on August 2, 1937 by Presidential Proclamation 2246 (50 Stat. 1856). The Proclamation stated that the Monument's purpose was to reserve in the public interest "narrow canyons displaying evidence of ancient sand dune deposits of unusual scientific value, and ...various other objects of geological and scientific interest." The monument originally comprised 14,998 hectares (37,060 acres).

The monument was enlarged by Dwight D. Eisenhower through Presidential Proclamation 3249 of July 2, 1958, 3 C.F.R. 160, which added "certain adjoining lands needed for the protection of the features of geological and scientific interest," bringing the total acreage to 40,100.

On January 20, 1969, Lyndon B. Johnson signed Presidential Proclamation 3888, 3 C.F.R. 387, which enlarged Monument boundaries six-fold to encompass 103,259 hectares (255,156 acres). This expansion was to add "certain adjoining lands which encompass the outstanding geological feature known as Waterpocket Fold and other complementing geological features, which constitute objects of scientific interest, such as Cathedral Valley."

On December 18, 1971, Congress abolished Capitol Reef National Monument and established Capitol Reef National Park, with its final boundaries encompassing 97,895 hectares (241,904 acres) (85 Stat. 639, 16 U.S.C. § 273 *et seq.*). This Act made provisions for land acquisition, management of grazing privileges, and trailing and watering regulations.

The General Management Plan (NPS 1998) describes the purpose and significance for Capitol Reef National Park derived from its enabling legislation as

- conserving and protecting such geologic wonders as the Waterpocket Fold, Cathedral Valley, narrow canyons, and evidence of ancient sand dune deposits, and objects of geologic and scientific interest; and
- protecting all park features from unauthorized appropriation, injury, destruction, or removal.

The General Management Plan further recognizes that "the park preserves a variety of habitat types that support diverse plant and animal life."

**Location** CARE is located in south central Utah within portions of Emery, Garfield, Sevier, and Wayne Counties. It is a high-elevation, cold desert park lying in the northern portion of the Colorado Plateau. It is 112 kilometers (70 miles) long and varies from 2 to 23 kilometers (1 to 14 miles) wide. It is 119 kilometers (74 miles) by road east of Richfield, Utah and 290 kilometers (180 miles) southwest of Grand Junction, Colorado.

**Elevation** Elevation varies from 2,731 meters (8,960 feet) on Thousand Lake Mountain in the northwest section to 1,183 meters (3,880 feet) in Halls Creek at the southern tip.

**General Description** CARE encompasses most of the 161 kilometer-long (100-mile) Waterpocket Fold, the largest exposed monocline in North America. The Waterpocket Fold formed 65 to 80 million years ago and consists of a geological uplift that stretches from Thousand Lake Mountain in the north to Lake Powell in the south. The park is named for this formation and some of its features. “Capitol” comes from the white sandstone domes that tower over the Fremont River and resemble the U.S. Capitol Rotunda, and “Reef” comes from the seafaring term for obstacles to navigation. A second noted feature is Cathedral Valley, a flat valley punctuated with sheer sandstone spires and fins.

CARE is situated on a slope that drops rapidly in elevation from west to east. Over a distance of 24 kilometers (15 miles), 11,000 foot-high mountains just west of the park drop to 1,219 meter (4,000 feet) high valleys to the east. The Waterpocket Fold is deeply cut along its length with west-to-east flowing canyons, the largest of which contains the Fremont River. Between the canyons are undulating sandstone domes or tilted slickrock plates. Two north-south oriented valleys are present on the eastern side, in geologic terms, strike valleys. They are less than a mile wide and are bounded by the Waterpocket Fold on the west and steep cliffs on the east. The dramatic scenery of Capitol Reef is the result of erosion of various rock layers during more recent geologic time.

Nearly 10,000 vertical feet of sedimentary rocks are exposed in and around Capitol Reef. Seventeen identified geologic formations (Billingsley et al. 1987) were originally deposited about 270 to 65 million years ago, under conditions varying from dry sand dunes to marine swamps. More recent volcanic activity formed lava dikes and sills in the northern end. Debris flows from Boulder and Thousand Lake Mountains deposited volcanic boulders on top of the sedimentary formations through the northern and middle sections.

The complex terrain and the natural processes that predominate at Capitol Reef combine to provide diverse habitats for plants and animals. The parklands support a patchwork of terrain, life zones, and habitats, where even slightly different combinations of slope, aspect, exposure, elevation, moisture, mineral content, and other variables blend to create distinctive microclimates and narrow niches. As a result, many sensitive desert species that require specific conditions—and which cannot survive outside of those parameters—occupy niches at Capitol Reef (NPS 1998). The Waterpocket Fold is home to numerous threatened, endangered, and rare species, as well as endemic plant species. This is one of the greatest concentrations in the region of plant taxa of special concern. The high plant diversity in CARE reflects the great range of habitats present and the geographic location at the intersection of several biogeographic regions (Heil et al. 1993).

**Flora** CARE supports a diverse floristic assemblage with over 900 vascular plant taxa documented. Dominant vegetation communities are typical of the Colorado Plateau Physiographic Province with pinyon-juniper woodland, grassland, and upland shrub

communities present. Thirty-four plant communities have been identified, with 11 being unique or first described here. Distribution of communities is controlled primarily by gradients in elevation and geologic substrate. Dry, hot areas at the lowest elevations support various upland shrub, grassland, and badlands communities; sandstones at low elevations and a variety of substrates at middle elevations support several kinds of pinyon-juniper communities; and cool, moist sites at high elevations are covered by woodland communities dominated by conifers or aspen. Riparian areas at all elevations support woodlands and wetlands (Heil et al. 1993).

Past livestock grazing has altered the composition and structure of many grassland and riparian communities in CARE. It may require many decades of grazing protection and possibly active intervention to restore these communities to their presettlement condition. Recovery of community structure probably will be more rapid in riparian areas than in grasslands, but restoration of original species composition may be slow in both areas. Establishment during the 20th century of exotic plants, e.g., tamarix (*Tamarix chinensis*) and cheatgrass (*Bromus tectorum*) has permanently changed the composition of many plant communities in CARE (Heil et al. 1993). Although plant communities have been described, no vegetation map has been completed.

**Fauna** There are over 300 species of mammals, birds, reptiles, amphibians, and fish found in CARE. Common mammals include mule deer, yellow-bellied marmots, bighorn sheep, and coyotes. Birds are most numerous in cottonwood and willow vegetation along streams and perennial water sources. Reptiles occur throughout the park. The most common lizards are the side-blotched and sagebrush lizards and the most common snakes are gopher snake and striped whipsnake. Amphibians are not common, being found only near streams, springs, and rock pools. Native and introduced fish species are found in Fremont River and Pleasant, Halls, Oak, and Sulphur Creeks.

**Aquatic Features** CARE has six perennial streams and many tinajas, which give the Waterpocket Fold its name. Tinajas are inventoried for the southern portion but not the northern. Several native and introduced fish species are found in the Fremont River and Pleasant, Halls, Oak, and Sulphur Creeks. Macroinvertebrates have been examined in a couple localities and several new species have been described. Water rights have not been adjudicated for this basin, but the park has numerous primary rights used to irrigate historic orchards and fields.

### **Unique Features and Species of Special Concern**

**Vegetation Communities** Four plant communities are of special concern because they are unique to the park, are vulnerable to disturbance, and/or are rare throughout their range. These include 1) bristlecone pine (*Pinus longaeva*)-cushion plant community which is very restricted in distribution, has very old trees, and contains several rare, endemic plant species; 2) waterpocket community (*Acer negundo*, *Populus fremontii*, and *Salix exigua*), which is restricted in distribution and provides value to wildlife far greater than its limited occurrence; 3) hanging garden community which is rare and fragmented in its distribution and contains several endemic plant species; and 4) hornbeam (*Ostrya*

*knowltonii*)-boxelder (*Acer negundo*)-oak (*Quercus gambelii*) woodland is restricted to a few localities in the southern end.

**Plants** CARE contains populations of eight of the 20 Federally listed plant species that occur in Utah. For several of the 24 NPS designated sensitive plant species, there are fewer than 5,000 individual plants known, and these are found primarily in Capitol Reef (Appendix G). This large number is primarily due to the diverse geology and topography and extensive endemism in the flora. Numerous geologic formations (each with its own range of soil moisture, soil chemistry, texture, and mineral composition) occur in narrow bands and at various elevation. This great variety of small habitats and unique growing conditions provides niches for a large number of plant species with limited ranges.

**Animals** CARE supports populations of 4 Federally listed animal species and 9 species considered sensitive by the NPS (Appendix F). The listed species are bald eagle (*Haliaeetus leucocephalus*) which is a winter resident; Mexican spotted owl (*Strix occidentalis lucida*) with up to 14 known nesting sites; southwest willow flycatcher (*Empidonax traillii extimus*) - status unknown; and Utah prairie dog (*Cynomys parvidens*) which is extirpated from the park. Sensitive animal species include 3 birds, 2 mammals, 1 reptile, 1 amphibian, and 2 fish.

### **Resource Management Concerns**

**Livestock grazing** A total of 1,380 Animal Unit Months (AUMs) of winter cattle grazing is permitted on 35,208 (87,000 acres) in the northern and central portions. Park resources (including flora, fauna and physical resources) are impacted by the direct and indirect effects of livestock grazing including displacement of native plant species by invasive exotic species; direct impacts to populations of rare plant species; and conversion of native plant communities. Grazing has been reduced 72% in the park since 1988 by reallocation of AUMs to areas outside the park and from willing-seller buyouts of grazing permits. Acquisition of AUMs on a willing-seller basis will continue as opportunities arise. However, because the park currently is legally obligated to provide grazing and trailing, other options for reducing domestic livestock grazing are not available. Additional grazing impacts are occurring from a herd of non-native bison introduced in the 1940s for hunting on adjacent public lands. The animals escape hunting pressure by entering the park and are creating intensive impacts in localized areas. Inventories of all taxa, especially sensitive species, are needed to properly evaluate the effects of grazing.

**Recreation Use** Visitor use increased rapidly during the 1980s and early 1990s causing soil and vegetation damage in heavily used areas. Impacts from visitors hiking off-trail destroy cryptobiotic soils and tramples vegetation, which accelerates erosion. Unfortunately, many of these areas contained rare plant species, some of which could become listed if plants in those localities disappear because of these impacts. Inventories have been done in the heavily used areas around headquarters but additional work has not been done evaluate other localities.

Land Use Impacts Agricultural practices, both upstream and within the historic district, continue to modify stream flows and increase nutrient loads in the Fremont River and Sulphur Creek. Water rights adjudication has not been completed for these streams, therefore instream flows are not guaranteed. A two-year project to inventory fish and stream habitats for the Fremont River is available through Regional Natural Resource funds.

Endemic Plant Species The large number of listed and very rare plant species increases the difficulty in evaluating effects of any management actions and creates an additional burden for law enforcement to monitor at-risk populations. The previously mentioned impacts are identified in recovery plans as threats to rare species and, in recent years, collection of rare plant species has increased dramatically. Several populations of listed species on park and adjacent BLM lands have been decimated by commercial collecting operations, and unscrupulous collectors are offering park plants for sale on the Internet. Because the park has only three patrol rangers for such a large area, all commercially valuable cultural and natural resources, including rare plants, are systematically looted each year with little chance of perpetrators being caught. We currently have an NRPP-funded three-year project to inventory all rare plants in the park. Using information from previous limited surveys, we are monitoring visitor and cattle impacts to several species. Once the park-wide survey is complete, monitoring would be expanded to include these species.

Invasive Exotic Plant Species There are 108 exotic plant species that occur within CARE. The majority are present in the Fruita orchards but five main problem species occur throughout the park. Tamarisk (*Tamarix chinensis*) and Russian olive (*Elaeagnus angustifolia*) are the primary invasives in riparian habitats along streams and washes. The Fremont River is the most heavily infested area and very little control efforts to date. The tree-of-heaven (*Ailanthus altissima*) is very dense locally in the Fruita and Sleeping Rainbow ranch areas and is being treated with moderate success. As a result of overgrazing, *Halogeton* (*Halogeton glomeratus*) and cheatgrass (*Bromus tectorum*) are the primary invaders in upland areas. *Halogeton* appears to be concentrated in the northern part of the park and cheatgrass is densest in the southern. Only the *Ailanthus* has been adequately mapped to be able to prioritize control efforts.